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Syllabic Weight in Tashlhiyt Berber

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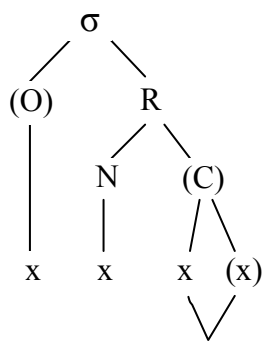
1. Preliminaries

In this essay we summarize what is known about syllable weight in Tashlhiyt Berber. Tashlhiyt is a language of Western Morocco spoken by around five million people. It has the following segment inventory: **b, f, t, tˤ, d, dˤ, s, sˤ, z, zˤ, ʃ, ʃˤ, ʒ, ʒˤ, k, kʷ, g, gʷ, q, qʷ, χ, χʷ, ʁ, ʁʷ, ħ, ʕ, ɦ, m, n, nˤ, l, lˤ, r, rˤ, w, y, u, i, a**. (Except for **y**, which represents an unrounded front glide, the phonetic symbols have their IPA values.) Consonants and glides all have geminate counterparts, and gemination is lexically contrastive: for example, **y-ukr** 'he stole' vs. **y-ukrr** 'he dragged'.

During the last thirty years Tashlhiyt has been a testing ground for various theoretical proposals about syllabification (see Calabrese 2005 and the references in Dell and Elmedlaoui 2002: 97 fn 48). Our account follows the analysis of syllable structure presented in DE2002, DE2008.[1] All Tashlhiyt syllables satisfy the syllable template in (1) below, where the parenthesized material is optional and where O, R, N and C stand for Onset, Rime, Nucleus and Coda. Complex onsets and complex nuclei are prohibited. Complex codas are allowed only if they consist of the two halves of a geminate.

[1] Hereafter, works by Dell and Elmedlaoui are cited in shorthand: DE1985 = Dell and Elmedlaoui 1985, DE2002 = Dell and Elmedlaoui 2002, and so on.

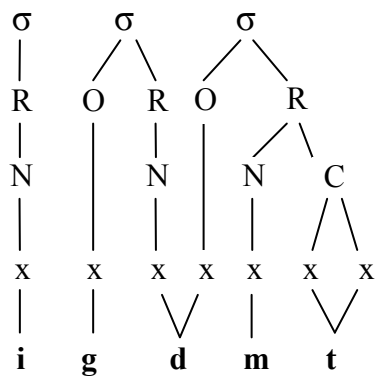
(1) SYLLABLE TEMPLATE



Complex consonant sequences are commonplace in Tashlhiyt but they fit readily into the simple syllable structure displayed in (1) because the language allows any consonant to be a nucleus.[2] Setting aside **a**, which can only be a nucleus, and the pairs **i/y** and **u/w**, which are involved in special alternations discussed in DE2002: 196-224, any segment can be an onset, a nucleus or a coda. Diagram (2) displays the syllable structure of the isolation form of the phonological word **igddmtt** 'he rushed against her'. (In the transcriptions in this paper vertical lines represent syllable edges.)

[2] Tashlhiyt has vowel-like sounds that occur in certain consonant clusters(see DE1985: 115-117, DE2002: 135-187, Ridouane 2008. These vocoids are not represented in our transcriptions since we hold that they are not segments in their own right but rather only transitions between segments. They have not been found to play a role in any phonological or morphological process in the language, nor in its versification. (They do play a role as pitch-bearers in singing, however; see DE2008: 151-182.)

(2) **|i|gd|dmtt|**



Besides template (1), another inviolable requirement is NoHiatus: A syllable can lack an onset only if it is at the beginning of a syllabification domain. In (2) the first syllable lacks an onset, as allowed by NoHiatus. In the geminate /dd/ the first skeletal position acts as the nucleus of the second syllable while the second position is the onset of the third syllable. In the third syllable the coda is a geminate, which is the only kind of complex coda allowed by template (1).

The evidence in favor of an account in which all Tashlhiyt syllables meet the template in (1) is discussed extensively in DE2002. The evidence presented there is twofold. One kind comes from verbal morphology[3] and the other from metricality judgments and text-to-tune alignment in traditional songs (See DE1988: 6-10, DE2002: 79-114, DE2008). Our account posits a distinction between heavy and light syllables: in a nustshell, syllables are heavy (H) if they have a coda; otherwise they are light (L). All the evidence in favor of a H/L distinction comes from traditional songs; as far as we know, the evidence from verbal morphology is neutral on this point.

[3] On imperfective gemination, see DE2013 and references therein; on length alternations in the causative prefix, see DE002: 124-134.

2. The H/L Distinction

2.1 Syllable weight in traditional songs

The basic principles of Tashlhiyt versification were discovered by Hassan Jouad; see Jouad 1983, 1995. Abundant syllabification data derived from Tashlhiyt verse can be found in Jouad 1995, DE2002 and DE2008. These works cite complete songs with their line-by-line scansion. These songs belong to a singing tradition that Tashlhiyt speaker call **amarg aqqdim** 'old poetry', to contrast it with more recent singing idioms that have appeared during the second half of the 20th century; for details see DE2002: 70-80, DE2008: 48-50 and references therein. Up to the present day, most Tashlhiyt speakers in rural areas are conversant with **amarg aqqdim** singing.

In most traditional Tashlhiyt songs, all the lines are built on the same meter. When lines follow the same meter, they have the same number of syllables, and their H and L syllables are arranged in the same order. We cite in (3) three lines of a song composed in a meter that requires 12 syllables to a line, with the third, tenth and twelfth H and all the others L (from DE2008: 118). (Spaces represent boundaries between clitic groups, equal signs represent clitic boundaries; hyphens represent word-internal morpheme boundaries.)

(3) a **ad=daʁ n-bdu yat l-qqiss-t, tin ayt u-marg.**

Let me once more tell a story, that of poetry aficionados.

b **ad=asn=d gu-ʁ mklli yadlli t-g. i-lazm**

Let me tell it as it happened. It is necessary

c **at=tnt n-bdr s=imi=nu slla-n=ays=ak^{w}k^{w} mddn.**

that I tell it with my mouth and that everyone hear it.

In the scansion of a line of Tashlhiyt verse, morphosyntactic boundaries are ignored and the line as a whole is taken as a single domain of syllabification. We can transcribe line (3a), for instance, as the sequence in (4i) below, in which each phonetic symbol represents a skeletal slot and its associated feature bundle. A sequence like (4i) is parsed into syllables as follows. First, the last segment in the line is set aside as extrametrical.[4] After that, the remaining sequence is broken down into successive chunks that all satisfy the syllable template in (1) and various other requirements discussed in DE2002. The result is shown in (4ii).

(4) i **a d d a ʁ n b d u y a t l q q i s s t t i n a y t u m a r g**

ii

ad	**da**	**ʁnb**	**du**	**ya**	**tlq**	**qis**	**st**	**ti**	**nay**	**tu**	**mar**	**<g**
1	2	3	4	5	6	7	8	9	10	11	12	

The scansions of the lines in (3) are displayed in (5). The numbering is for the readers' convenience; the boxed letters and the parentheses in the row of syllable weights will be explained below.

(5)

	1	2	3	4	5	6	7	8	9	10	11	12	
	(L	L	H	(L	L	L	L	(L	L	H	(L	H	
a	**a$\boxed{\text{d}}$**	**da**	**ʁnb**	**du**	**ya**	**tl$\boxed{\text{q}}$**	**qi$\boxed{\text{s}}$**	**st**	**ti**	**nay**	**tu**	**mar**	**<g**
b	**a**	**da**	**snd**	**gu**	**ʁm**	**kl**	**li**	**ya**	**dl**	**lit**	**gi**	**laz**	**<m**
c	**a$\boxed{\text{t}}$**	**tn**	**tnb**	**dr**	**si**	**mi**	**nu**	**sl**	**la**	**nay**	**sa$\boxed{\text{k}^{\text{w}}}$**	**k^{w}mdd**	**<n**

Pursuant to NoHiatus, which allows onsetless syllables only at the beginning of a syllabification domain, line-initial syllables are the only ones that lack onsets. Since there are

[4] On line-final extramatricality, see DE2008: 58ff. Line-final extrametricality makes it possible to do away with the line-final 'compound syllables' of DE2002: 96-97.

no complex onsets, in syllables that are not line-initial the nucleus is always the second skeletal slot.

The weight of syllables depends on the phonological make-up of their rimes. Syllables are H if they have a coda, and L otherwise. This is only a first approximation. The rule for assigning syllable weight in Tashlhiyt verse contains a proviso (DE2002: 93):

(6) WEIGHT: Syllables that lack a coda are L; others are H, *except that syllables with a hinge coda can count either as H or as L*.

We say that a syllable has a hinge coda when its coda is the first skeletal slot of a geminate that straddles a syllable boundary. The weight of syllables with a hinge coda is determined by the needs of the meter. In (4ii) syllables 1, 6 and 7 have hinge codas and they count as L, as shown in (5a), where hinge codas are boxed for the sake of conspicuousness. It must be kept in mind that the special status of hinge codas is a matter that concerns the assignment of syllable weight, not phonetic implementation. Geminates are longer than their simplex counterparts in singing as well as in everyday language, and this is true in particular in the case of syllables with hinge codas that count as L for the meter. At the beginning of (5a) one does not pronounce the sequence /adda/ as though it were /ada/.

Given the high frequency of geminates in Tashlhiyt, hinge codas provide poets with a powerful 'wild card'. Note, however, that the wild card has no effect on how lines get divided up into syllables; it only concerns the syllable weight and it only involves a subset of those geminates that straddle a syllable boundary. In line (3c)/(5c) the stem **slla** is syllabified |sl|la|, with a geminate lateral that straddles the syllable boundary, but the first half of the geminate is not a coda (it is a nucleus), and so the first syllable does not fall under the purview of the italicized dispensation in (6). That syllable can only count as L.

To give another example, we now cite three lines from a song whose meter requires thirteen syllables to a line, with the first and eighth syllable H, and all the others L (DE2008: 184). Their scansion is given in (8).

(7) a **ayɦayya tad=iyi=sul i-skr wada=d n-mun!**

Ah! the things that my former companion has done to me!

b **i-rˤzm=d i=w-aggu=fllaʁ; r-rˤsas a s ad i-kkat.**

He has flooded me with smoke; he has attacked me with lead (i.e. with a gun).

c **ʃuf ʁik-a=d n-ga=fllak, a bnadm t-agʷi-t=aʁ.**

See what has become of me because of you, you (barely human) creature, (and yet) you reject me (i.e. you show no sympathy).

(8)

	1	2	3	4	5	6	7	8	9	10	11	12	13	
	H	(L	L	L	L	(L	L	H	(L	L	L	L	(L	
a	**ay**	**ɦay**	**ya**	**ta**	**di**	**yi**	**su**	**lis**	**kr**	**wa**	**da**	**dn**	**mu**	**<n**
b	**irˤ**	**zm**	**di**	**wag**	**gu**	**fl**	**la**	**ʁrrˤ**	**sa**	**sa**	**sa**	**dik**	**ka**	**<t**
c	**ʃuf**	**ʁi**	**ka**	**dn**	**ga**	**fl**	**la**	**kab**	**na**	**dm**	**ta**	**gʷi**	**ta**	**<ʁ**

An implication of (6) is that the weight of a syllable is independent of the feature bundle associated with its nucleus; it depends only on what comes after the nucleus. Jebbour (1996, 1999) and Bensoukas (2001) have proposed analyses of Tashlhiyt morphological patterns in which they assume that syllables with consonantal nuclei are unimoraic even if they have a coda. This assumption conflicts with the massive evidence to the contrary that can be

gathered from the poetic material presented in the works by Jouad and DE cited at the beginning of this section.[5]

2.2. Orthometric syllabification vs. grammatical syllabification

The syllable structure of any utterance is but one aspect of the phonological representation that the grammar of the language assigns to that utterance. This is what we call grammatical syllabification. Grammatical syllabification is governed solely by the sound patterns of the language and has nothing to do with poetic convention. In poetic traditions like that of Tashlhiyt, syllable structure has an additional role, which is to provide the basis on which poets and their audience assess the metricality of verse, i.e. its conformity to a meter. When syllabification is considered in this role, we call it orthometric syllabification. In Tashlhiyt, as in some other poetic traditions, there are differences between the two syllable structures. Our primary source of evidence concerning syllable weight is orthometric syllabification, but the ultimate goal of our inquiry is grammatical syllabification, and so it is important to have a clear view of the relationship between them.

In order to pinpoint the differences between the two kinds of syllabification one must take into account the fact that the syllabification procedure must operates at least twice in any utterance or line of verse (DE2002: 210-212). In its first pass syllabification builds syllable structure over lexical stems considered in isolation, leaving everything else unsyllabified. This pass is necessary because verb stems show certain length alternations that can be analyzed as sensitive to syllable structure, provided syllable structure is assigned to them without taking into consideration the adjacent affixes (see note 3). The second pass, which leaves nothing unsyllabified, operates over spans which we call maximal syllabification domains. In songs the maximal syllabification domain is the line of verse

[5] Lahrouchi (2012) challenges the analysis embodied in DE2002, and more generally all syllable-based accounts of Tashlhiyt phonology. DE2013 is a detailed refutation of Lahrouchi's paper.

taken as whole, minus its last segment. (4) is in fact a representation of the second pass of syllabification in a line of verse, simplified for the sake of expository convenience. It is simplified because its input (4i) does not show the syllable structures |**b**|**du**|, |**q**|**qiss**| and |**ma**|**rg**| that were erected during the first pass of the stems /**bdu**/ 'begin', /**qqiss**/ 'story' and /**marg**/ 'poetry' . During the second pass these structures are resyllabified with the unsyllabified segments of the neighboring morphemes. For instance the /**b**/ of /**bdu**/, which was a nucleus in |**b**|**du**|, becomes the coda of the syllable |**ʁnb**|, the second syllable in |**ma**|**rg**| is broken down, its nucleus /**g**/ becoming extrasyllabic while its onset /**r**/ becomes the coda of the syllable |**mar**|, and so on.

Since morphology is the same in verse and in everyday language, we can assume that the differences between orthometric syllabification and grammatical syllabification are confined to the second syllabification pass. Here are these differences in a nutshell: orthometric syllabification is blind to pauses and the orthometric syllables in a line of verse all conform strictly to template (1). By contrast, pauses play a role in grammatical syllabification, where syllables adjacent to pauses can have complex onsets or codas, in violation of the template. The two syllabification modes have different ways of delimiting maximal syllabification domains, as we now explain.

In the grammatical syllabification of Tashlhiyt the maximal syllabification domain is a string that is bounded by pauses and is not interrupted by any pause. By a pause we mean a period of silence due to a complete cessation of the articulation. Syllabification can always occur across a word boundary, no matter what the syntactic relationship between the two words, so long as they are not separated by a pause. The sentence **arm, a ħmad!** 'try, oh Hmad!' must be syllabified as |**ar**|**maħ**|**mad**|, and the only way to prevent the final consonant of **arm** from being an onset to the following vowel is to pause between the verb and the vocative particle.

In contrast to the maximal syllabification domains in grammatical syllabification, which are bounded by pauses, those of orthometric syllabification are whole lines of verse, regardless of pauses that may occur in singing. Orthometric syllables that straddle a pause are commonplace in traditional singing. A case in point is line (9), where the double bar shows the location of a pause that is required by the tune to which the line is sung (DE2008: 247, 251). The pause, which coincides with a word boundary in this line, divides the text into two stretches that we have labeled A and B.

(9) **ɦann urd a-sg^{w}g^{w}as ula sin** || **ad laħħ l-χ^{w}bar^{ʕ}=nk**

A || B

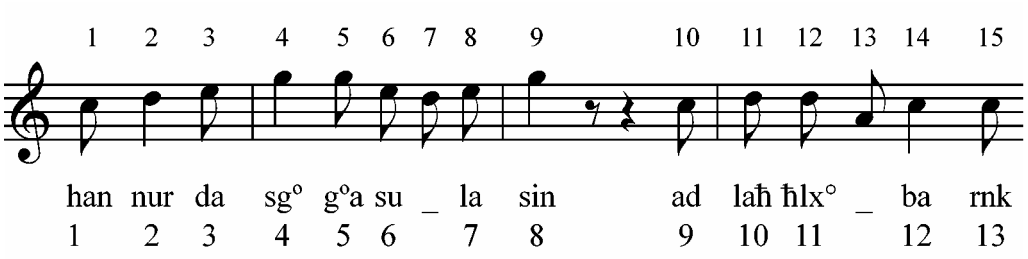
It's been more than just one year or two || since I last heard from you.

As we shall see, the segments /n/ and /a/, which sit on either side of the pause, belong to the same orthometric syllable. Line (9) is drawn from a song whose meter demands 13-syllable lines, with syllables 2, 9 and 11 heavy and the others light. The line's scansion is given in (10).

(10)		1	2	3	4	5	6	7	8	9		10	11	12	13	
	a	L	H	(L	L	L	L	(L	L	H	(	L	H	L	(L	
	b	**ɦa$\boxed{\text{n}}$**	**nur**	**da**	**sg^{w}**	**g^{w}a**	**su**	**la**	**si**	**nad**		**la$\boxed{\text{ħ}}$**	**ħlχ^{w}**	**ba**	**r^{ʕ}n**	**<k**

The pause falls between the onset and the nucleus of syllable 9. The pause is not a property of the meter of the song, but of its tune. It occurs between the ninth and the tenth note of the melody, and in every line of the song these notes are associated with orthometrical syllables 8 and 9 because syllable 6 is sung to two notes in succession. The alignment of the text with the tune is displayed in (11). The numbering above the score is for musical notes and that under it is for syllables.

(11)



The syllabic parse at the bottom of (11) is due to grammatical syllabification. Its only differences with the orthometric parse are that the line-final consonant is taken into account and that instead of being the onset of syllable 9 , /n/ is the coda of syllable 8.

Orthometric syllabification and grammatical syllabification both operate in the second syllabification pass, but they play different roles. Orthometric syllabification is used to assess the metricality of the line, while grammatical syllabification is among the determinants of its phonetic realization. Also, the two syllabification modes have different maximal domains.

For the purposes of orthometric syllabification, the string in (9) minus its last consonant constitutes a single syllabification domain. The resulting sequence of syllables is displayed in (10b). The metricality of the line is assessed by determining whether (10b) conforms to the meter of the song, which is represented in (10a). For the purposes of grammatical syllabification, on the other hand, the strings (9A) and (9B) are separate syllabification domains. At the end of (9A) the /n/ is syllabified with the preceding vowel. Consequently the last syllable of (9A) ends in a coda, while the first syllable of (9B) lacks an onset, as allowed at the beginning of a syllabification domain.

To summarize, in the first pass, whose domain is the stem, grammatical syllabification is the only syllabification mode. This holds in poetry as well as in colloquial language. When poetic material is subjected to the second pass, grammatical syllabification and orthometric syllabification operate independently of one another to produce syllabic parses that are identical except at the edge of the syllabification domains.

In the example above, the two parses have the same number of syllables. This is not always the case, because in grammatical syllabification, syllables that are at an edge of a maximal syllabification domain — syllables that are pre- or postpausal — are subject to special conditions: they disallow obstruent nuclei, but they allow complex margins excluded by template (1). For instance, prepausal syllables may not have an obstruent as their nucleus.When the normal syllabification procedure generates a syllable with an obstruent nucleus before a pause, a late readjustment rule merges that syllable with its immediate neighbour, thus creating a complex coda which is otherwise disallowed. To take an example, the word **/l-qqiss-t/** 'story' is trisyllabic when it precedes another one whose initial segment is an onset, as in **/l-qqiss-t#ra-n/** 'the story that they want' (|**lq**|**qis**|**st**|**ran**|), but it is dissyllabic before a pause, as in the sentence **/ra-n#l-qqiss-t/** 'they want a story', which syllabifies as |**ra**|**nlq**|**qisst**|, with a prepausal syllable |**qisst**| which is the result of merging into one the two syllables of the sequence |**qis**|**st**| generated by normal syllabification.[6]

The evidence about syllabification next to a pause comes from native speaker judgments about syllable count and the location of syllabic nuclei in words and phrases pronounced in isolation. In our 1985 works these judgments were our main source of evidence about Tashlhiyt syllabification at large. We pointed out in DE2008 that these judgments agree with orthometric syllabification except in the vicinity of pauses, and our DE2002 account relies heavily on orthometric syllabification in traditional songs. One reason for shifting our attention to songs was that we found that Tashlhiyt speakers vary in their ability to form judgments like those used in our 1985 work, which raised concerns about the reproducibility of our data. By contrast, the lyrics of traditional songs can be considered a

[6] The late readjustents that occur next to pauses are discussed briefly in DE1985: 119-120 and DE1988: 5. Their existence is mentioned in DE2002 and DE2008, but no new analysis is proposed. See Clements 1997: 309-319 for a constraint-based account of pre- and postpausal syllables.

repository of judgments about acceptable syllabifications and this repository is stored in commercial recordings open to the scrutiny of anyone.

Unlike grammatical syllabification, orthometric syllabification is not affcted by interruptions in the speech stream. These interruptions may be pauses mandated by musical structure, as in the example above, or they may occur at a change of participant within a line of verse. In the Tashlhiyt song discussed in DE 2008: 113-116, there are two participants, a chorus singing in unison and a soloist. In every stanza one participant takes over from the other after the first word of a line, and the locus of the switch falls inside the orthometric syllable that straddles the first and the second word of the line. Insensitivity to change of speakers within a line is also well documented in various traditions of scenic verse, e.g. in Latin (Sturtevant and Kent 1915: 132) and in French (DE 2008: 107-109).

3. The Evidence for a Moraic Analysis of the H/L Contrast

The above discussion shows that Tashlhiyt syllables fall into two classes, based on the distinction between two positions in meters: some syllables can only occupy L positions while others can only occupy H positions. (The two classes overlap in the case of syllables with hinge codas.) We now turn to the evidence in support of the claim that in Tashlhiyt L syllables contain one mora and H syllables contain two. In themselves, the facts presented in the preceding sections do not warrant this claim. We need to find evidence that H and LL are in some sense equivalent.

3.1. Verse feet in 'straight' meters

The main source of data in favor of a moraic analysis of syllable weight in Tashlhiyt is again provided by verse.

An equivalence between H and LL emerges from comparing various Tashlhiyt meters with one another. The meters found in Tashlhiyt traditional songs form a very rich inventory. One has yet to work out a system that would circumscribe the subset of H/L sequences that are possible Tashlhiyt meters. In our work towards this end we have gathered over one hundred different meters. 55 among them form a remarkable class that we call the 'straight meters' (DE2008: 32ff, 88ff.). The regularities shared by the straight meters are best stated in terms of moras, and so they support a moraic analysis of the weight distinction in Tashlhiyt.

Assuming the moraic analysis, these meters can be analyzed as sequences of four-mora feet, with incomplete feet allowed at the edges of lines. The possible feet are LHL, LLH and LLLL, i.e. all the four-mora sequences that do not begin with H. Consider again the meter of (10), which is reproduced in (12):

(12)	1	2	3	4	5	6	7	8	9		10	11	12	13
	L	H	(L	L	L	L	(L	L	H	(	L	H	L	(L

The parentheses represent foot boundaries. Syllables 3 to 12 form a sequence of three complete feet. Positions 1, 2 and 13 belong to incomplete feet, whose incompleteness is indicated by the fact the parenthesis on their end of the line is missing. The initial foot is an LLH foot bereft of its initial L, while the final foot is an LLH foot with its final LH missing.

Table (13) displays a small sample of the straight meters. The meters themselves are in the 'Meter' column. Most of these meters begin and/or end with incomplete feet. The 'Initial' column gives the missing parts at the beginning of line-initial incomplete feet; the 'Final' column gives the missing parts at the end of the line-final incomplete feet. Column 'Altern' will be explained below. The meter in (13a) is that in (12). The meters in rows (13b) and (13d) are those of (8) and (5).

(13)	Initial	Meter	Final	Altern
a	(L	L H (L L L L (L L H (L H L (L	L H (	bABAb
b	(L L	H (L L L L (L L H (L L L L (L	L H (	bABAb
c	(L L	H (L L L L (L L H (L H L (L	L H (	bABAb
d		(L L H (L L L L (L L H (L H	L (	BABa
e		(L H L (L L H (L L L L (LLH (		ABAB
f	(L	H L (L L H (L H L (L L H (L	H L (	aBABa
g		(L H L (L L H (L H L (L	L H (	ABAb
h	(L	L H (L L L L (L	L H (	bAb

In addition to being made up of four-mora feet, straight meters meet an alternation condition on the sequencing of these feet. Let us divide the feet, complete or not, into two classes. Class A consists of LHL, LLLL and their incomplete forms, while class B consists of LLH and its incomplete forms. The alternation condition requires that adjacent feet not belong to the same class, A or B. In table (13) column 'Altern' represents each meter as a sequence of (feet belonging to) classes A and B. Lower case letters at either end represent incomplete feet.

The division into four-mora feet and the alternation condition are properties that can be stated without making reference to the songs' music. In most songs with straight meters, there is furthermore a regular correspondence between foot structure and the rhythm of the melodies: every fourth mora of the text coincides with a strong beat. More precisely, the second syllable of every foot is on a strong beat of the melody. The meters of (5), (8) and (10)

are reproduced below with marks that indicate the positions that coincide with strong beats in the music.[7]

(14) a (L L H (L L L L (L L H (L H
^ ^ ^ ^

b H (L L L L (L L H (L L L L (L
^ ^ ^

c L H (L L L L (L L H (L H L (L
^ ^ ^

The correspondence between strong beats and second moras is overwhelming, but not absolute. It is violated in some songs. When violations occur they tend to be located near the ends of lines. (14c) is a case in point; see DE2008: 86-88 for more discussion of the correspondence between the foot structure of lyrics and the regular beat of the melodies.

3.2. Templatic plurals

Outside of versification, the only regularity known to us as pointing in the direction of a moraic analysis of syllable weight is found in a class of templatic noun plurals that are all of the form **VCCa-n** or **VCCCa-n**.[8] **VCCa-n** must be syllabified as |**V**C|**Can**|, and **VCCCa-n,** as |**V**|**CC**|**Can**|. What unifies the two syllabic parses is that both can be considered to contain four moras. Table (15) gives a few examples (See Elmedlaoui 2012 for more examples.).

[7] The musical score for (14c) is displayed in (11); see DE2008: 111. Those corresponding to (14a) and (14b) can be found in DE2008: 135, 190.

[8] The initial ***V*** belongs to the stem in some nouns while it is a prefix in others. ***-n*** is the default plural suffix for nouns. For an overview of the nominal morphology of Tashlhiyt, see DE2002: 26-37.

(15)	a	**i-tri**	**i-tra-n**	**|it|ran|**	'star'
	b	**ink**	**anka-n**	**|an|kan|**	'hearth stone'
	c	**a-zrg**	**i-zrga-n**	**|i|zr|gan|**	'mill'
	d	**a-mazir**	**i-mzra-n**	**|i|mz|ran|**	'manure'
	e	**a-duku**	**i-duka-n**	**|i|du|kan|**	'shoe'
	f	**a-qʃʃab**	**i- qʃba-n**	**|i|qʃ|ban|**	'shirt'
	g	**i-frkki**	**i-frkka-n**	**|i|frk|kan|**	'hull'
	h	**a-g^{w}g^{w}rdi**	**i-g^{w}g^{w}rda-n**	**|ig^{w}|g^{w}r|dan|**	'flea'
	i	**ibbi**[9]	**ibba-n**	**|ib|ban|**	'breast'

If templatic plurals of the form **VCC(C)a-n** are indeed evidence for a moraic analysis of syllable weight in Tashlhiyt, this raises several questions. One question concerns the various levels at which syllabification operates in the derivation of an utterance. The plural template responsible for the forms in (15) must span a whole word, including the plural suffix **-n** and the initial vowel, which is a prefix in many nouns. This implies that between the two syllabification passes discussed in section 2.2 we must posit yet another syllabification pass whose domain is the word.

Another question concerns the status of hinge codas. Rows (15f-i) illustrate the behaviour of geminates in the formation of templatic plurals. In a nutshell: the quantity of

[9] A masculine augmentative form derived from the feminine ***t-ibbi-t*** 'breast'.

geminates is preserved in the plural, unless its preservation would result in a violation of the template.

In (15f) the second consonant of the stem is degeminated in the plural, because if gemination were preserved in the plural the resulting form (***i- qʃʃba-n**) would contain five moras: |**i**|**qʃʃ**|**ban**|, with two moras in the medial syllable. (The geminate is not a hinge coda.) Turning to noun (15g), which preserves its lexical geminate in the plural **i-frkka-n**, we note that in |**i**|**frk**|**kan**| the second syllable has a hinge coda. The italicized dispensation in WEIGHT (6) allows us to consider this second syllable as containing only one mora, and the whole word as containing four moras. Similarly, the plural form in (15h) satisfies the four-mora template because its initial syllable can be considered to contain only one mora on account of its hinge coda. Gemination is also preserved in **ibba-n** (15i); degemination would yield ***iba-n** (|**i**|**ban**|), which contains only three moras.

If templatic plurals are to be viewed as satisfying a four-mora template, hinge codas must be taken to contribute a mora in some forms (15i) and not in others (15g,h). The behaviour of templatic plurals suggests that rather than being merely a convention that governs the oral literature of the Tashlhiyt, the double value of hinge codas is a feature of the language itself.

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